



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,672	02/22/2002	David F. Mayer	30533	3626
7590	07/15/2004		EXAMINER	
David A Greenlee PO Box 340557 Columbus, OH 43234-0557			COLON, ROCIO	
			ART UNIT	PAPER NUMBER
			2651	

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/069,672	MAYER, DAVID F.
Examiner	Art Unit	
	Rocio Colon	2651

## ***Office Action Summary***

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 22 February 2002.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-17 and 20 is/are rejected.

7)  Claim(s) 18 and 19 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 22 February 2002 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_ .

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The limitation "inner and outer race members" are not described in the specification.

3. Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification disclose over 32,000 heads mounted in a silicone wafer. There is not enough information in the specification to support how physically this amount of heads may be mounted on a silicon wafer to read/write from a disk.

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: **36, 72, 102, 104, 106, 222, 224 and 226**. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office

action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show **50, 81, 98, 114a, 114b, 114c, 118** and **227** as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because: reference character “82” has been used to designate the comparison buffers, data transfer module, and sequence operation module; reference character “84” has been used to designated both the data transfer module and

the sequence operation module;

reference character "70" has been used to designate both a line of the electronics circuits and address lines.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### *Claim Objections*

1. Claim 12 recites the limitation "the disk controller". There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination, the dependency of claim 12 has been changed to claim 10.
2. Claim 13 recites the limitation "the reactance loops". There is insufficient antecedent basis for this limitation in the claim.
3. Claim 15 recites the limitation "the other said member". There is insufficient antecedent basis for this limitation in the claim.

#### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 9-11 are rejected under 35 U.S.C. 102(a) as being anticipated by Sakata et al. (USPN 5,920,447).

Regarding claim 9, Sakata et al. disclose 9 a computer disk drive comprising a driven disk having a plurality of data storage tracks (column 3, lines 57-58), and a disk assembly comprising at least one fixed read/write/verify head associated with the disk (column 3, lines 60-61), wherein the head assembly processes all tracks concurrently, thus enabling all tracks to be processed during a single revolution of the disk (column 4, lines 10-13).

Regarding claim 10, Sakata et al. disclose the head assembly includes a disk controller having means for performing repeated data insertions to maintain the proper order of pending operations (column 15, lines 11-25).

Regarding claim 11, Sakata et al. disclose the disk controller includes means to move entire blocks of data simultaneously to/from the head assembly (column 9, lines 37-47).

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lazzari (USPN 4,809,103) in view of Hashimoto et al. (USPN 6,045,901).

Regarding claims 1 and 2, Lazzari disclose a computer disk drive having a driven disk and a head assembly comprising at least one read/write head associated with the disk, wherein

the heads are fabricated of crystalline silicon (column 2, lines 39-41). Lazzari fail to explicitly disclose the disk is fabricated of crystalline silicon and is coated with an amorphous layer of neodymium and cobalt. However these limitations are well known in the art as evidenced by Hashimoto et al. which discloses a recording medium fabricated of crystalline silicon (column 5, lines 27-33) and is coated with a layer of neodymium and cobalt (column 5, lines 31 and 38). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Lazzari because Hashimoto et al. teaches the disk may be fabricated of crystalline silicon to provide a magnetic recording medium with excellent running durability at high temperature and high humidity conditions.

Regarding claim 3, Lazzari disclose the head assembly is mounted on a single silicon wafer (column 2, lines 39-42).

Regarding claim 6, Lazzari et al. the disk has read and write electronics that are mounted on the same silicon wafer which mounts the magnetic heads (column 2, lines 39-42 and Fig. 2, elements 11 (head) and 12 (integrated circuit)).

Regarding claim 7, Lazzari et al. disclose the disk the silicon wafer includes a beveled edge mounting the heads, and the read and write electronics are mounted elsewhere on the silicon wafer in a position removed from the vicinity of the disk (Fig. 2, element 11 (head) and 12 (integrated circuit)).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lazzari in view of Hashimoto et al. and further in view of Glover et al. (USPN 5,852,524).

Lazzari in view of Hashimoto et al. fail to explicitly disclose a head assembly is provided for each side of a disk. However this limitation is well known in the art as evidenced by Glover

et al. which disclose a head assembly provided for each side of a disk (Fig. 3, elements 28A and 28B). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Lazzari and Hashimoto et al. because Glover et al. teaches a head assembly may be provided for each side of a disk to provide simultaneous access to the top and bottom surfaces of the disc.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lazzari in view of Hashimoto et al. and further in view of Sakata et al.

Regarding claim 5, Lazzari in view of Hashimoto et al. fail to explicitly disclose the disk is divided into two or more circular zones, and a separate head assembly is provided for each zone. However this limitation is well known in the art as evidenced by Sakata et al. which disclose a disk divided into two or more circular zones (column 3, lines 55-58) and a separate head assembly is provided for each zone (column 3, lines 60-64). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Lazzari in view of Hashimoto et al. because Sakata et al. teaches the disk may be divided into zones and a separate head assembly may be provided for each zone for simultaneously writing and /or reading magnetic information on the disk.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lazzari in view of Hashimoto et al. and further in view of Lewis et al. (USPN 6,570,730).

Lazzari in view of Hashimoto et al. fail to explicitly disclose the disk includes proximity sensors and piezoelectric actuators. However these limitations are well known in the art as evidenced by Lewis et al. which disclose a disk including proximity sensors to sense the spacing of the head on the wafer relative to the disk (column 2, lines 15-17), and piezoelectric

actuators directed by the proximity sensors to precisely control said spacing (column 2, lines 17-26). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Lazzari and Hashimoto et al. because Lewis et al. teaches the disk may include proximity sensors and piezoelectric actuators to measure the distance between the head and the disk and correct this distance as necessary.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakata et al. in view of Moller (USPN 6,157,985).

Sakata et al. fail to explicitly disclose the disk controller contains data buffers, and the disk drive includes a data transfer module and an operation sequence module. However these limitations are well known in the art as evidenced by Moller which disclose a disk controller that contains data buffers (column 3, line 64), and the disk drive includes a data transfer module for transferring data between the data buffers (column 4, lines 9-13), and an operation sequence module connected to a host computer for accepting, sorting and completing requests instructed by said computer, wherein both modules operate concurrently and semi-independently (column 3, lines 66-67 and column 4, lines 1-2). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Sakata et al. because Moller teaches the disk controller may contain data buffer and the disk drive may include a data transfer module and an operation sequence module to store and control the data transfer from/to the host to/from the disk.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (USPN 5,847,485) in view of Kinoshita (USPN 6,323,572).

Regarding claim 13, Suzuki et al. disclose a disk rotor drive assembly that includes a spindle and a data disk mounted thereon for rotation therewith relative to a support (column 1, lines 5-9), the improvement comprising a magnetic bearing having a rotor member mounted on the spindle for rotation therewith and a stator member mounted on the support (Fig. 4, elements 14 (rotor), 17 (stator) and 10 (bearing) and column 4, lines 43-46). Suzuki et al. fail to explicitly disclose one of the members comprise a plurality of permanent magnets. However this limitation is well known in the art as evidenced by Kinoshita which disclose a rotor having a plurality of identical sets of permanent magnets in a circumferential array, each set comprising four different magnets arranged, sequentially counterclockwise (Fig. 2D), with north poles respectively pointed inward (Fig. 2D, the magnet with the "S S S" configuration), counterclockwise (Fig. 2D, the magnet with the "N S" configuration), outward (Fig. 2D, the magnet with the "N N N" configuration), and clockwise (Fig. 2D, the magnet with the "S N" configuration), such that rotation of the rotor induces magnetic fields in the reactance loops that cooperate with the magnetic fields of the permanent magnets to suspend the rotor relative to the stator for substantially frictionless relative rotation (column 4, lines 2-5). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Suzuki et al. because Kinoshita teaches the rotor may comprise four permanent magnets in a circumferential array each set comprising four different magnets arranged, sequentially counterclockwise to improve the magnetic force in the air gap.

8. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. ('485) in view of Kinoshita and further in view of Suzuki et al. (USPN 6,288,465).

Regarding claims 14 and 15, Suzuki et al. ('485) in view of Kinoshita et al. fail to explicitly disclose the spindle comprises reactance loops spaced axially above and beneath the rotor. However this limitation is well known in the art as evidenced by Suzuki et al. ('465) which disclose a spindle motor in which the stator reactance loops are spaced axially above and beneath the rotor (Fig. 1, element 6 (rotor) and 7(stator) and column 12, lines 39-41). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Suzuki et al. ('485) in view of Kinoshita et al. because Suzuki et al. ('465) teaches the rotor may be spaced axially above and beneath the rotor by reactance loops to maintain the rotor in the center of the motor.

Regarding claim 16, Suzuki et al. ('485) in view of Kinoshita et al. fail to explicitly disclose a pair of said magnetic bearings. However this limitation is well known in the art as evidenced by Suzuki et al. ('465) which disclose a spindle motor comprising a pair of magnetic bearings, each of which is oppositely axially spaced from the disk to support both ends of the spindle (Fig. 1, element 8). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the device of Suzuki et al. ('485) in view of Kinoshita et al. because Suzuki et al. ('465) teaches the spindle motor may include a pair of magnetic bearings to provide excellent static rigidity.

***Allowable Subject Matter***

9. Claims 18 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Raffetto et al. (USPN 3,913,142) disclose having a recording head for each of the tracks on the disc (see abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rocio Colon whose telephone number is (703) 305-3947. The examiner can normally be reached on Mon-Thu 8:00a.m.-6:30p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (703)308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RCV  
May 24, 2004

  
DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600